Memorandum

Date: December 30, 2005

To: Assistant Commissioner, Staff

From: DEPARTMENT OF CALIFORNIA HIGHWAY PATROL
Departmental Training Division

File No.: 90.14670.A12706.91s&W 4006tsw

Subject: SERVICE PISTOL EVALUATION AND RECOMMENDATIONS

The Academy Weapons Training Unit (WTU) was tasked with providing an evaluation of our current primary weapon system and to provide a recommendation of a replacement system should our current weapon system not meet current demands. Presently, the Department utilizes the Smith & Wesson (S&W) 4006.

The S&W 4006 was first introduced in 1990. The Department purchased 7,000 pistols in 1990, 1,500 pistols in 1994 plus 329 pistols absorbed from the State Police, 340 pistols in 2001, and 75 pistols in 2002 for a total of 9,244 pistols. Of this total, 1,228 pistols have been purchased by retired employees, stolen, lost, destroyed, or traded back to Smith & Wesson. The Department currently owns 8,016 pistols with 856 designated as loaner pistols, training pistols, and issue stock.

The manufacturer projects the service life of the S&W 4006 to be 20,000 rounds. Using a calculation of 50 rounds per month during a regular shoot and the number of rounds fired during Academy training, a pistol would have a projected useful life of approximately 30 years. However, a survey of area range officers indicates that many officers are firing more than 50 rounds a month with the implementation of alternate courses of fire, skills building shoots, outside training (shooting schools, allied agency tactical training classes, etc.), and personal development.

The WTU found that many officers are shooting 100 rounds a month. With the implementation of the extra shoots, an officer can double or even triple the number of rounds being fired through his/her weapon each year, thus halving the estimated service life. The Department purchases five million rounds of pistol ammunition each year. The majority of these rounds are fired by field officers. The current number of sergeants and officers assigned to the field is 6,288. This equates to an average of 800 rounds fired per year for each sergeant or officer. Using this estimate, the service life of a new pistol will be reached in approximately 22 years. Given that 1,171 pistols have been issued at least two times and that in many Areas officers are firing closer to 1,200 rounds per year, plus the 2,500 rounds fired during cadet training, this indicates that many pistols have reached or will reach the end of their service life in the next three years.

Presently, the Department has 24 S&W 4006 pistols ready for issue and 145 pending inspection prior to re-issue. Many of the S&W 4006 pistols currently in stock have been through Academy training three or more times. The Department has not purchased new pistols for field issue since 2002. Thus, cadets are issued weapons that have been issued to at least one previous user.

The Department currently has 7,160 S&W 4006 pistols issued to uniformed employees. The following table shows how many pistols have been issued two or more times.

# of times issued	# of pistols	%
1	5,989	83.6
Two or more times	1,171	16.4

Smith & Wesson no longer makes the S&W 4006 pistol. Therefore, the Department will have to consider replacement alternatives when the current supply of pistols is exhausted. The Department currently has 169 pistols available for re-issue. Given 68 pistols for CTC IV-05 and 125 cadets for CTC I-06, the Academy is projected to have an insufficient number of pistols to issue to CTC II-06, scheduled to begin on May 5, 2006.

Recently, the WTU noted a number of recurring problems with our current weapon system due to wear related issues. There is currently no system in place to record the number of rounds fired through an individual weapon. The most common problems being experienced by the pistols can be traced to excessive wear, specifically; worn recoil springs, extractor problems, cracked barrels, cracked frames, and cracked slides. These aforementioned problems will increase the longer a weapon remains in service. The concern of the WTU is that as maintenance issues increase, the probability of a weapon malfunction occurring during a deadly force encounter will also increase. The S&W 4006, as with any mechanical device, the longer it is in service the more maintenance it will require and the more susceptible it becomes to malfunction.

There is no tracking system in place to monitor each weapon's maintenance record, or the number of rounds that have been fired through it. As a measure of maintenance issues encountered since 2001, the number of cracked barrels has steadily increased.

The following chart is a breakdown of cracked barrels by year:

Year	# of cracked barrels
2001	45
2002	49
2003	62
2004	86
2005 up to December 12th	125

Because Smith & Wesson no longer manufactures the S&W 4006 it takes at least three months to repair pistols with cracked barrels, cracked frames, or cracked slides. The Department currently has 31 pistols with cracked barrels, 12 pistols with cracked slides, and six pistols with cracked frames at the Smith & Wesson factory awaiting repairs. Some of the pistols with cracked barrels have been out of service since October and some of the pistols with cracked slides or frames have been out of service since May. This places an additional strain on our stock of pistols available for issue to cadets as Areas request additional loaner pistols. This lengthy repair time is due to Smith & Wesson having to stop production to make parts specifically for our pistols. In the case of a cracked barrel, Smith & Wesson has to make an S&W 4006TSW barrel, modify it by hand for the S&W 4006, and then custom fit it into a specific pistol. Additionally, it is no longer possible to obtain the adjustable rear sight for the S&W 4006 and we replace the adjustable rear sight with an S&W 4006TSW fixed rear sight.

Smith & Wesson recommends replacement of individual parts as necessary, rather than changing a particular part at a particular round count. The Academy gunsmiths have found the S&W 4006 to be very reliable with the type and frequency of repairs average for the age and normal wear and tear experienced by the pistols. The Department's experience with Smith and Wesson relative to service and repairs has been very favorable and their customer service has been excellent.

The S&W 4006 has proven itself as a reliable and effective weapon system that, if still produced, would provide the Department with dependable field service for many years. The S&W 4006 has been replaced by the S&W 4006TSW, which features a number of advantages over the S&W 4006. The frame to slide fit is tighter, reducing the amount of vertical movement between the slide and frame during recoil. The delayed lock time keeps the barrel and slide together longer, slowing down the slide faster and reducing the impact of the barrel unlocking and the slide stopping against the frame. Both of these improvements reduce the stresses applied to the frame, extending the useful life of the pistol.

The barrel unlocking system has also been changed resulting in better accuracy. The high maintenance adjustable rear sight has been replaced with a low maintenance fixed rear sight. The decocking/safety lever has also been replaced by a spring loaded decocking lever. This prevents a safety device from accidentally engaging, which occurred to one of our officers during a combat shooting and resulted in his inability to fire his weapon.

The projected service life of the S&W 4006TSW is 30,000 rounds. The recommendation of the WTU is for the Department to fully convert to the S&W 4006TSW over the next three years. This pistol is an updated version of the S&W 4006 and has already been tested and evaluated by the Department. The conversion would require minimal training and would provide our officers with an improved version of the current weapon system. The S&W 4006TSW would require a new holster; however, the magazines are the same. Converting to the S&W 4006TSW will standardize the weapon system in the field, providing our officers with the latest version of the pistol currently in use.

There are serious issues concerning both models being utilized in the field during any transition period. The biggest concern would be an officer who is trained on an S&W 4006TSW with a spring loaded decocking lever being issued a loaner model S&W 4006 that has a manually operated safety/decocking lever. The concern is that should an officer become involved in a combat shooting with a loaner weapon, the officer may not realize the safety/decocking lever is in the down position and that the weapon will not fire. Furthermore, the S&W 4006TSW does not fit in the model 4006 holsters. In addition to the loaner weapon, Area weapons officers would need to keep a supply of alternate holsters. This is also an officer safety concern, in that officers would have to be issued holsters they are not familiar with or been trained to use.

The WTU presently has 275 S&W 4006TSW pistols in stock. These pistols were manufactured at our request without a light rail (mounting surface for a flashlight). The WTU recommends that our current stock of S&W 4006TSW pistols be traded in for new pistols with the light rail. The S&W 4006TSW pistol is normally manufactured with the light rail and ordering pistols without a light rail will increase the production time and cost to the Department. The light rail does not effect the operation of the pistol and does not create any additional training issues. It is also very expensive to add a light rail post production to the pistol ($200). This ensures pistol uniformity and eliminates having select units, such as the Special Weapons and Tactics Team (SWAT), having two pistols issued to one person. If an officer is authorized to have a light mounted on their pistol the only additional equipment required would be a special holster and the light. When the officer leaves the unit he/she would simply return the issued light and holster.

Due to the limited supply, and worn condition, of the pistols in stock it will be necessary for the Academy to begin issuing the S&W 4006TSW to CTC II-06. To date, no S&W 4006TSW pistols have been issued to the field; however, 25 S&W 4006TSWs have been issued to SWAT. The WTU has received very favorable comments from SWAT relative to the performance and

accuracy of the S&W 4006TSW. Additionally, the departmental gunsmiths performed a full inspection of one of the SWAT S&W 4006TSWs. The weapon inspected had approximately 25,000 rounds fired through it. The gunsmiths found an increase in durability and a decrease in the wear of the weapon as compared with the S&W 4006. The S&W 4006TSW has a life expectancy of 30,000 rounds, 10,000 rounds more than the current S&W 4006.

If the Department transitioned to a pistol other than the S&W 4006TSW, the WTU will require at least six months to test and evaluate the new firearm. Additionally, an intensive training program, similar to the Department-wide program implemented in 1990, would be required to properly train personnel with the new weapon. The costs would include the new firearm, magazines, magazine pouches, holsters, statewide training (i.e., loading and clearing procedures, malfunction procedures, muscle memory training concerning trigger reset and grip, etc.), training ammunition, and statewide training of all weapons officers on the inspection procedures for the new firearm.

The Department will need to purchase 7,160 S&W 4006TSW pistols to replace the pistols currently issued to the field and cadets. There will be a need to purchase an additional 856 weapons for assignment as loaner weapons at the Area and Division level and an amount ready to issue stock from the Academy. The Department's cost of purchasing the S&W 4006TSW can be offset by the manufacturer's offer to buy back the existing S&W 4006s at approximately $171.00 per weapon. Smith and Wesson provided an approximate cost of $675.00 for a new model S&W 4006TSW, minus the trade value of the 4006s. Also, the WTU recommends allowing officers to purchase the S&W 4006s that they are currently issued at the same price offered to retiring uniformed employees.

Estimated cost to purchase 8,016 S&W 4006TSWs:

New 4006 TSW (including six magazines per weapon)	$675.00 each x 8,016 uniformed personnel, ready to issue stock, area and division loaner weapons = **$5,410,800**	
Approximate trade value of existing 4006s to Smith and Wesson	$171.00 each x 8,016 = $1,421,865	**- $1,370,736**
	subtotal:	**$4,040,064**
Approximate off set cost created by officers purchasing personal firearms (* numbers are based on the current approximate 45% of retired officers who purchase their duty weapon)	Purchase cost $356.82 Minus trade in $171.00 Offset $185.82 x *150 = $27,873	- $ 27,873
	subtotal:	**$4,012,191**
Approximate cost to replace current departmentally issued holsters to accommodate the S&W 4006 TSW	Current cost for right handed holsters: $32.80 each Current cost for left handed holsters: $69.51 each (Total estimated cost was based on an estimate that 10 percent of the uniformed personnel are left handed, 775 left-handed holsters and 6,976 right-handed holsters.)	+ $ 282,683
	Total estimated cost of weapon transition:	$4,294,874

The following is a schedule to complete the proposed purchase:

Purchasing S&W 4006TSW Pistols.

Two weeks – Requisition submission and approval.
Two months – Department of General Services approval and award.
Three to four months – Production and delivery of S&W 4006 pistols.
One month – Gunsmith inspection of new pistols.

Estimated date new pistols could be ready for issue if requisitioned January 2, 2006 is June 19, 2006.

Estimated date of CTC-2-06 pistol issue is August 2, 2006.

Depletion of Current Supply of S&W 4006 Pistols.

Current stock of S&W 4006 pistols ready for issue or awaiting inspection –	169
Estimated pistol turn-ins from retiring employees in 2006 -	230
Total estimated pistols available in 2006 -	399
Number of pistols needed for: CTC-4-05	68
CTC-1-06	125
CTC-2-06	125
CTC-3-06	125
CTC-4-06	125
Total number of pistols required for cadet classes through 2006	568
Estimated shortage of pistols for cadets in 2006 -	169*

*This number does not reflect the additional number of loaner pistols that may have to be sent out to the field due to pistols being out of service for an extended time due to a cracked barrel, cracked slide, or cracked frame.

The S&W 4006TSW offers the Department the best weapon system that can withstand the demands placed upon our firearms and that meets the needs of the Department. It is recommended that the transition to the model S&W 4006TSW be initiated as soon as possible to avoid having multiple weapons systems in the field and to accommodate the production time for Smith and Wesson to manufacture the required number of pistols.

The WTU recommends that the Department purchase enough S&W 4006TSW pistols and holsters each year to complete the transition in the next three years. This will allow the Academy to issue new pistols to cadets, provide new pistols for exchange when pistols out of service for an extended time (cracked barrels, slides, and frames), and provide for the complete Department-wide transition to the S&W 4006TSW in three years (two to three Divisions each year). At a minimum the Department needs to purchase a sufficient number of S&W 4006TSW pistols each year to equip cadet classes and provide loaner weapons for Areas.

Should you have any questions relative to this matter, please contact Sergeant Gilbert Lee, Academy Weapons Training Unit, at (916) 376-3239.

J.E. MCLAUGHLIN
Assistant Chief

RELEVANT FACTS

1. Percent of 4006 pistols issued two or more times – 16.4%.

2. There has been an increase in the number of 4006 pistol repairs.

3. Smith & Wesson no longer manufactures the 4006 pistol making it difficult or impossible to obtain certain parts (rear sights, barrels, slides, frames).

4. Estimated time frame for Smith & Wesson to replace cracked barrels, slides, and frames is three to five months.

5. The number of cracked barrels, frames, and slides has increased over the last five years. In 2001 there were 45 cracked barrels. In 2004 there were 86 cracked barrels. To date in 2005 there have been 125 cracked barrels.

6. Estimated time frame to order and issue new 4006TSW pistols is six to seven months.

7. Estimated time the Department will run out of pistols for cadet issue is August 2006.

8. The extended time (approximately three months) to repair cracked barrels, frames, and slides will necessitate the need for additional loaner pistols and further deplete the pistols available for cadet issue, accelerating the date the Department will exhaust the supply of pistols.

9. The cost of a 4006TSW pistol is $675.00. Smith & Wesson has offered a $171 trade in credit for 4006 pistols which gives an actual cost of $504 for 4006TSW pistols.

10. The Department needs to purchase new pistols in January 2006 to avoid not having enough pistols for cadet issue.

11. Only purchasing enough 4006TSW pistols for cadet issue will leave the Department unprepared if large numbers of 4006 pistols develop cracked barrels, frames, and slides (refer to # 5). If the number of 4006 pistols out of service for three or more months exceeds the number of available pistols, the Department will not be able to provide pistols to officers and/or cadets until more 4006TSW pistols can be purchased (refer to # 6).

12. Purchasing enough 4006TSW pistols for the entire Department over a three to four year timeframe will spread the cost over multiple years and allow for a smooth transition to the 4006TSW with minimal disruption to Departmental operations.